

Amendments to the Specification:

Please add the following new paragraph at page 1, after the title of the application:

This application is the U.S. National Phase application of PCT International Application No. PCT/GB2004/001680, filed April 19, 2004, and claims priority to British Patent Application No. 0308944.8, filed April 17, 2003, and British Patent Application No. 0318982.6, filed August 13, 2003.

Please add the following heading at page 1, line 3:

FIELD OF THE INVENTION

Please add the following heading at page 1, line 7:

BACKGROUND OF THE INVENTION

Please replace the paragraph beginning at page 3, line 25, with the following rewritten paragraph:

In a second embodiment of EP 0758713, a NO_x reducing catalyst is disposed downstream of the filter for catalysing the reduction of the NO_x to N₂ using diesel HC fuel and CO. The NO_x reducing catalyst can be a zeolite such as ZSM-5 ion exchanged with copper or iron, or mordenite supporting platinum. However, it is clear from EP 0758713 that HC reductant for reducing the NO_x is introduced into the exhaust system either by injecting additional fuel during the exhaust cycle or directly into the exhaust passage. In either case, injection is done always upstream of the CRT[®] oxidation catalyst.

Please insert the following paragraphs at page 4, before line 1:

EP 0888816 discloses an exhaust emission control catalyst containing the three metals copper, praseodymium and yttrium, wherein the hydrocarbon: nitrogen oxide mole ratio is within a range of from 0.5 to 30.

EP 0541271 discloses a catalyst system for treating NO_x in the exhaust from a lean-burn gasoline-fueled engine, which system comprising a first stage catalyst containing a transition metal-exchanged zeolite (i.e. Cu-ZSM5), and a second stage catalyst, which is a three-way catalyst, for treating the effluent from the first stage catalyst. The engine is controlled such that the ratio of NO_x to HC in the exhaust gas is in the range of from 1/3 to 3/1 (i.e. minimum C₃H₆ of 250 ppm and NO_x of 200 – 400 ppm). Only the performance of the second stage catalyst and the first and second stage catalysts in combination is assessed in the Examples.

Please replace the paragraph beginning at page 4, line 1, with the following rewritten paragraph:

~~In our WO 03/037507, we describe~~ WO 03/037507 describes an exhaust system for an internal combustion engine comprising a catalyst, such as a platinum-based catalyst, for oxidising NO to NO₂ when the exhaust gas composition is $\lambda > 1$; and a filter disposed downstream of the NO oxidation catalyst, i.e. in the CRT[®] configuration. The filter can comprise an oxidation catalyst such as platinum and/or palladium, rhodium and a NO_x absorbent material, such as any of those described in EP 0758713 above. ~~The A filter component~~ per se of this arrangement is described in Japanese patent no. 2722987.

Please add the following heading at page 4, line 8:

SUMMARY OF THE INVENTION

Please add the following headings and paragraphs at page 4, line 21:

BRIEF DESCRIPTION OF THE DRAWINGS

In order that the invention may be more fully understood, the following Examples are provided by way of illustration only and with reference to the accompanying drawings, in which:

Figure 1 is a graph showing %NO₂ conversion as a function of temperature (°C) for NO₂ decomposition catalysts with and without diesel fuel injection (about 120ppm C1 (MK1)) relative to a blank reactor control;

Figure 2 is a graph showing NO production from NO₂ in the presence of diesel fuel as a function of temperature relative to a blank reactor control;

Figure 3 is a graph showing NO₂ decomposition over a Cu/Beta-30 zeolite catalyst at HC:NO₂ of 0.5 as a function of temperature;

Figure 4 is a graph showing %NO₂ conversion over a Cu/Beta-30 zeolite catalyst at HC:NO₂ of 0.5 as a function of temperature;

Figure 5 is a graph showing NO₂ / NO_x ratio (%) over a Cu/Beta-30 zeolite catalyst at HC:NO₂ of 0.5 as a function of temperature;

Figure 6 is a graph showing NO₂ decomposition over a Cu/Beta-30 zeolite catalyst at HC:NO₂ of 0.25 as a function of temperature;

Figure 7 is a graph showing NO₂ / NO_x ratio (%) over a Cu/Beta-30 zeolite catalyst at HC:NO₂ of 0.25 as a function of temperature;

Figure 8 is a graph showing NO₂/NO_x ratio (%) over a Cu/Beta-30 zeolite catalyst at HC:NO₂ of 0.25 as a function of temperature;

Figure 9 is a graph showing %NO₂ decomposition as a function of temperature comparing the activity of aged 5Cu/Beta-30 zeolite catalysts;

Figure 10 is a graph showing %NO₂ decomposition as a function of temperature comparing the activity of a series of 5Cu/zeolite catalysts;

Figure 11 is a graph showing %NO₂ decomposition as a function of temperature comparing the activity of two 5Cu/ZSM5 catalysts having zeolites of differing silica to alumina molar ratios;

Figure 12 is a graph showing %NO₂ decomposition as a function of temperature comparing the activity of coked and uncoked 5Cu/Beta-30 catalysts;

Figure 13 shows a temperature programmed oxidation (TPO) trace of a "coked" 5Cu/Beta-25 zeolite catalyst;

Figure 14 shows a graph of %NO₂ as a function of temperature comparing the activity of a series of non-zeolite catalysts compared to 5Cu/ZSM5-30; and

Figure 15 shows a graph of %NO₂ decomposition activity for a series of copper-containing non-zeolite catalysts compared to 5Cu/Beta-25.

DETAILED DESCRIPTION OF THE INVENTION

Please delete the paragraphs beginning at page 4, lines 31 through page 5, line 9.

Please replace the paragraph beginning at page 8, line 32, with the following rewritten paragraph:

In this arrangement, NO₂ generated over the oxidation catalyst during $\lambda > 1$ conditions can be absorbed in the NO_x absorbent material and stored as the nitrate. Since the NO_x absorbent material has a finite capacity to absorb NO_x, it is necessary periodically to regenerate it, i.e. to remove the stored NO_x. Generally, this ~~is~~ may be done in practice by transiently adjusting the λ composition to lower the oxygen concentration of the exhaust gas, for example by introducing additional HC fuel into the exhaust gas or by allowing less air into the combustion mixture. The resulting exhaust gas is "enriched" but need not result in a $\lambda < 1$ composition. The nitrate forms of the alkali, alkaline earth and rare earth metals are understood to be unstable in rich exhaust gas, and so NO_x is released, in what is believed to be a mixture of at least NO and NO₂.

Please delete the paragraphs at page 11, line 15 through page 12, line 31.